DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

OPEN-FILE REPORT OF 77-76 MAP--K
Mineral resource, geological, and geophysical maps of the New River Gorge area, Fayette, Raleigh and Summers Counties, West Virginia

Discussion

Recent slides.--There are only a few slides in the New River area that have been active in historical time. The largest are along the valley wall on the north side of the New River east of Thurmond. Two slides, one about a mile (1.6 km) and the other about 2 miles (3.2 km) long, measured across the face of the slide, have developed in thin deposits of weathered sandstone mixed with unsorted clay, sand, and fragments of vegetation. These deposits are up to 30 ft (9 m) thick and underlie slopes of 30° to 45°. The slides move slowly and do not involve bedrock. In small areas where the slides have been affected by alteration of the toe or from mining activities, movement has been accelerated resulting in more rapid movement of small earth and debris flows.

Two small, active slides in deposits similar to those described occur along Piney Creek 2 miles northeast of Beckley.

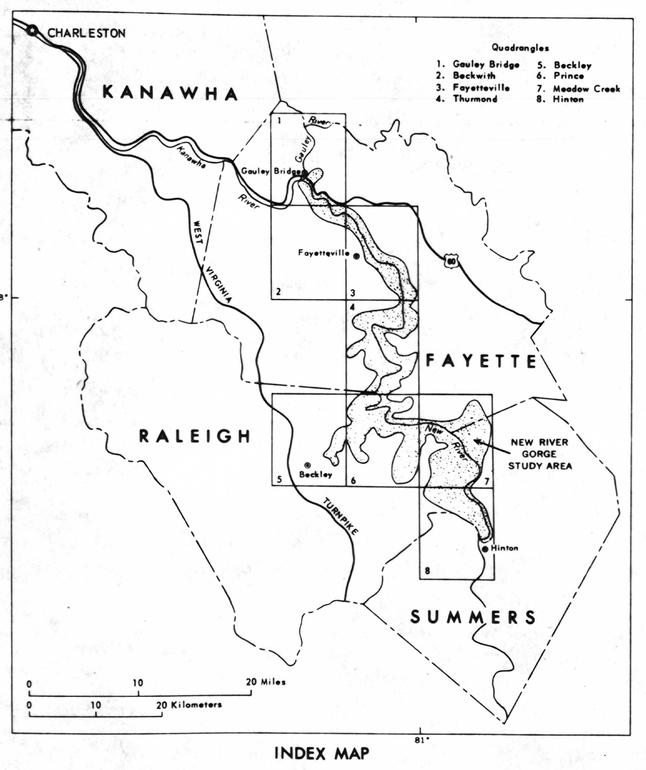
Older slides.--Many slides occur throughout the New River Gorge area which show no signs of present movement and for which there is no historical record of movement. Most of these slides are along the walls of the New River Valley between Stonecliff and Meadow Creek. In this section of the valley the upland is formed by thick sandstone of the New River Formation and the valley walls are shale and sandstone of the Pocahontas Formation. Further south the shales of the Bluestone Formation, which lie beneath the Pocahontas Formation, are at the base of the valley walls. The sandstone weathers into slabs and blocks that move down the steep slopes and along with clay and silt derived from weathering of the shales, forms deposits up to 100 ft (30 m) thick of material whose slopes are near the natural angle of repose. These deposits have a high water content which, along with the heterogeneous mixture of clay and rock debris, makes them susceptible to sliding. The older slides are up to 12,000 ft (3,600 m) long across the face and extend up slope as much as 3,900 ft (1,200 m). Most of these slides extend to a depth of 30 ft (9 m) or less and do not involve bedrock. The surfaces of the lower parts of the slides are hummocky with low, rounded ridges trending across the slide. The middle and upper portions of the slides are long, narrow parallel lobes, 20 to over 100 ft (6 to 30 m) wide trending down slope and merging with or overlapping the hummocks in the lower part of the slide. The valley walls in the slide area are recessed forming shallow, steep-sided amphitheaters.

Most of the old slides are stable unless altered by man. Removal of material from the toe by rapid and massive excavating methods and overloading of the upper part of the slide by fills commonly lead to renewed sliding.

Debris avalanches.--Along the valley walls of the New River there are several steep side valleys that have evidence of old debris avalanches. These valleys are up to 100 ft (30 m) wide and are notches extending from the rim of the upland to the valley floor with a nearly uniform gradient. At their mouths there are fan-shaped mounds of poorly sorted debris which do not grade into the flood plain of the New River but are bounded by a steep slope up to 20 ft (6 m) high. Debris avalanches are not common in this area today and develop only when very heavy rainfall, such as from hurricanes, occurs. The areas susceptible to debris avalanches are mainly in narrow valleys where thick debris from weathering of rocks has accumulated and where tree-cover is dense.

Earthflows in castings from surface mines.--Surface mines (strip mines) are on steep valley walls along parts of the New River and its tributaries. Spoil material cast on these steep slopes is generally not stable and in some areas it slides. The slides are generally in small, shallow, steep-side valleys and extend as much as 500 ft (150 m) downslope and are V-shaped with a width as much as 500 ft (150 m) at the top. The material in the slides is saturated with water and movement of the slides is rapid.

Rockfalls.--Cliffs of sandstone that form the rim rock along the top of valleys in the New River area as well as steep cut faces in bedrock along roads and railroads give rise to rockfalls. Most of these falls occur as single boulders toppling from the outcrops. Some of the boulders are of immense size with some sides up to 100 ft (30 m) and weighing up to 10,000 tons. Practically all the rockfalls move only a short distance downslope from the base of the cliff in which they originate and since these areas are mainly in forests they seldom cause extensive damage to structures.



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EXPLANATION

Area of landslide

a - Recent landslides, mostly earthflows.

P - Older landslides, earthflows and debris flows.

Old debris avalanches.

Recent earthflows in castings from surface mines.

Rockfalls

Proposed wild and scenic river boundary.

Proposed National Park boundary.

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This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards or nomenclature.

SCALE 1:50 000
1 MILE
1 KILOMETRE
CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

MAP OF LANDSLIDES, NEW RIVER GORGE AREA, FAYETTE, RALEIGH, AND SUMMERS COUNTIES, WEST VIRGINIA

By

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1977